

Exhibit 1 for the: *NOAA Coastal and Marine Habitat Restoration Project Grants under the American Recovery and Reinvestment Act (Project Summary)*

**Project Summary (2 pages)**

Applicant Organization: Lake County (Ohio) Port Authority  
Project Title: Lake County Coastal Plan: Implementation  
Site Location: Lake County, Ohio  
-Eastlake (41°40'40.5", 81°26'19.8")  
-Mentor-on-the-Lake/Mentor (41°43'38.9", 81°21'9.5")  
-Perry Township (41°47'47", 81°9'53.6")  
-Madison Township (41°50'17.1", 81°2'49.9")

Land Owner \*: Eastlake  
-State of Ohio  
Mentor-on-the-Lake/Mentor  
-Mentor Harbor Yacht Club\*\*  
Mentor Harbor Yachting Club  
5330 Coronada Drive  
Mentor-on-the-Lake, Ohio 44060  
-State of Ohio  
Perry Township  
-Perry Township  
Walter Siegel, Administrator, 440.259.5140  
-State of Ohio  
Madison Township  
-Madison Township (both Township and Stanton Park)  
Larry Advey, Administrator, 440.428.5128  
-State of Ohio

\* Indicates work to be performed in the waters of Lake Erie

\*\* Currently in the process of transferring property to the Lake County Port Authority

Start Date: July 2009

**# / types of jobs:**

Approximately 45 construction jobs (123,920 man hours) will be created during the construction of the projects and last for approximately 18-24 months (weather and moratoriums due to spawning could impact construction). The average expected salary (wages and benefits) is approximately \$50 per labor hour. Typical jobs will include operating engineers, laborers, foremans, and surveyors. In addition to construction jobs, research from the 2005 "Landside Communities Conceptual Master Plan and Focus Area Plans" indicate landside develop activities (residential and commercial development) will compliment the waterfront improvements.

**Habitats to benefit:**

The offshore breakwaters will provide new habitat area for fish and fish spawning. In addition to reducing erosion and run-off, hillside stabilization via native plants will provide shelter and food to birds, butterflies and other wildlife, promoting biodiversity in the area.

**Project Scope:**

The funds will be used to construct five components of the County's coastal plan:

1. Chagrin River (Offshore Breakwaters): provides a protected harbor and safe passage between the river and the lake, and addresses the river-based sedimentation at the entrance.
2. Mentor Harbor: Shoreline protection and improved access to the harbor through the use of an offshore breakwater. This will require either a sand bypass system or scheduled maintenance dredging to keep the entrance channel open. Sand that is bypassed or dredged should be placed east of the entrance channel to maintain the littoral drift system. Major elements of this concept include removal of the partially submerged barge, channel dredging, and construction of an approximately 650' offshore breakwater.
3. Perry Twp. Park: Concept for approximately 2000 lineal feet of shoreline that includes: the protection and stabilization of the bluff west of the concrete revetment (Camp Roosevelt Area), creation of a more usable shoreline or beach at the base of the bluff and providing incorporation of ADA access to the lake for recreational opportunities.
4. Stanton Park: Slope stabilization/shoreline protection and increased public beach access.
5. Madison Twp. Park: Removal of unsafe coastal protection measures and installation off offshore barrier islands to increase fish habitat and create a swimming beach area.

Implementation and monitoring plans (specifically for littoral sand movement) will be in accordance with the Ohio Department of Natural Resources Office of Coastal Management.

Outputs/Outcomes:

The implementation of this eight year countywide initiative will: provide increase fish habitat via offshore barrier islands (approx. 4,000') along the north coast of Lake Erie, protect valuable coastal resources from excessive shoreline erosion in part through the re-introduction of native vegetation on the slopes, remove unsafe and counterproductive coastal protection measures and ultimately provide increased public lakefront recreational (swimming beach access, fishing, boating) opportunities. These improvements will also create economic development opportunities near the project sites due to increased visitation to the area.

Timeline:

Project will begin in the summer of 2009 with demolition, some channel improvements and securing of required Ohio and National regulatory permits. Weather dependent, construction will continue through late fall/winter of 2009 and continue in spring 2010 thru winter 2010. Final work will be completed in the summer of 2011.

Permits/Approvals:

Local approval from the four project communities has been achieved. Preliminary site/project designs have been deliberated with the State of Ohio and US Army Corp of Engineers. Necessary permits from the State of Ohio include: Ohio Submerged Lands Lease, Shore Structure Permit, Consistency Certification, and Section 401 Water Quality Permit. Federal permits include: US Army Corps of Engineers Section 404 Permit. All permits will be submitted upon immediately completion of final engineering.

Funds Requested/Anticipated Match: \$18,800,000.00, federal request / \$1,920,000.00, match to be used for final engineering/permits.

Overall Project Cost: \$20,720,000.0

## **Project Narrative (15 pages)**

### **Background**

The Lake Erie coastline is a dynamic environment continually eroding through wave action, to be replenished by sedimentation resulting from littoral drift. Unfortunately this system has been upset by man made structures that may provide some local protection from wave action, but interrupts the replenishing action of littoral drift. Consequently, shoreline communities that once enjoyed sand beaches are now left with eroded waterfronts, unsightly barriers and little if any public access to one of Ohio's greatest resources, Lake Erie.

Significant private ownership of the shoreline complicates the ability to address this situation. However, Lake County Ohio recognized both the problem and opportunities associated with acting as a good steward of the Lake Erie shoreline. Beginning in 2001, under the leadership of the Lake County Planning Commission and the participation of numerous public and private organizations as well as concerned individual, in addition to financial support from NOAA through the Ohio Department of Natural Resources, the community began the process of identifying the problems and opportunities facing the County shoreline. Over the past 8 years a Coastal Development Plan was developed and in 2008, the newly formed Lake County Port Authority assumed the responsibility for implementing the plan. This grant request is a result of this multi year effort undertaken by the entire Lake County Community.

The Lake County Planning Commission has developed a comprehensive Coastal Development Plan (CDP) as part of a county-based initiative to refocus attention on the value of Lake Erie as a major environmental, economic, and recreational resource. Many individual studies have been conducted along the shoreline over the years resulting in a substantial data base of information. Subsequent studies have quantified the data to provide comprehensive integrated plan.

The process for creating the CDP included the participation of representatives from numerous Lake County communities through the formation of the Lake County Coastal Planning Committee. It also included the critical input of various representatives from the United States Army Corps of Engineers (USACE), Ohio Environmental Protection Agency (OEPA), and the Ohio Department of Natural Resources (ODNR) in an advisory capacity.

As a document, the Coastal Development Plan:

- provides a record of existing coastal conditions along the Lake County shoreline to serve as a benchmark for future shoreline improvements;
- identifies existing land use patterns and the location of potential land use opportunities for improved shoreline use, lake access, and the creation of coastline "destinations" for residents and visitors of Lake County;
- identifies potential technical solutions for protecting shoreline beaches, bluffs, and harbors, and creating safe environments for boaters and shoreline recreation;

The Lake County coastline is characterized by a broad range of physical conditions unprotected but stable sandy beaches, steep eroding bluffs, partially armored private residences, and communities and harbors with various degrees of accessibility and shelter.

## Physical Conditions

The primary factor affecting the formation and appearance of the coastline is wave action. Waves are the predominant cause of most shore erosion, sediment transport and deposition. The size, force, and direction of waves is a function of lake levels, bathymetry (lake bottom shape and depth) wind direction, and distance over open water which wind from a certain direction blows (fetch). The wave climate in Lake County can be severe due to a shoreline with direct exposure to the northeast through northwest. This condition and the effect on the shoreline can be exacerbated at high lake levels (current lake levels are approximately at historic norms). Data from the Ohio Department of Natural Resources Division of Geologic Survey (1997) indicates recession rates range from 0' per year to approximately 10' in severe high bluff situations.

Sediment transport is the sediment material that is moved by waves and currents. The sediment contained in the long shore transport system is a result of continual bluff erosion. Although material moves in both directions along the shoreline, the predominant direction in Lake County is southwest to northeast. It is a major factor in determining the viability or feasibility of many coastline projects since interrupting this pattern with shoreline structures can 1) rob coastal areas of their beaches and cause shoreline recession; and 2) choke bays, inlets and harbors with excessive sedimentation. While there are many areas that are sensitive or subject to shoreline recession and degradation within the county, particularly sensitive areas include all private and public lands with natural beaches. In contrast, areas that experience significant sand deposition include the harbors at Eastlake, Mentor-on-the-Lake, and Fairport.

Increased development both inland and along the shoreline has had a significant impact on the appearance and condition of the shoreline. It has been estimated that up to 85% of Ohio's coastline is developed or contains shoreline structures. This study estimates that up to 60% of the Lake County shoreline is armored at private and public properties (per the shoreline classification described later in this section). It is within this context that opportunities for preserving, enhancing, or recreating shoreline ecosystems should be identified. These include beaches, natural areas, coastal wetlands, rivers, streams, and other drainages that contribute to the Lake Erie coastal environment.

## Plan Development

With this in mind, the Lake County Planning Commission began an initiative in 2001 to provide a more detailed understanding of the shoreline issues, concerns, and opportunities for the twelve Lake County lakefront communities. This included Coastal Comprehensive Plans for Eastern Lake County, Western Lake County, and the Village of Fairport Harbor. While these plans were in progress, the Lake County Coastal Planning Committee (LCCPC) was formed to begin preliminary feasibility analysis and needs assessment for potential projects along the entire shoreline.

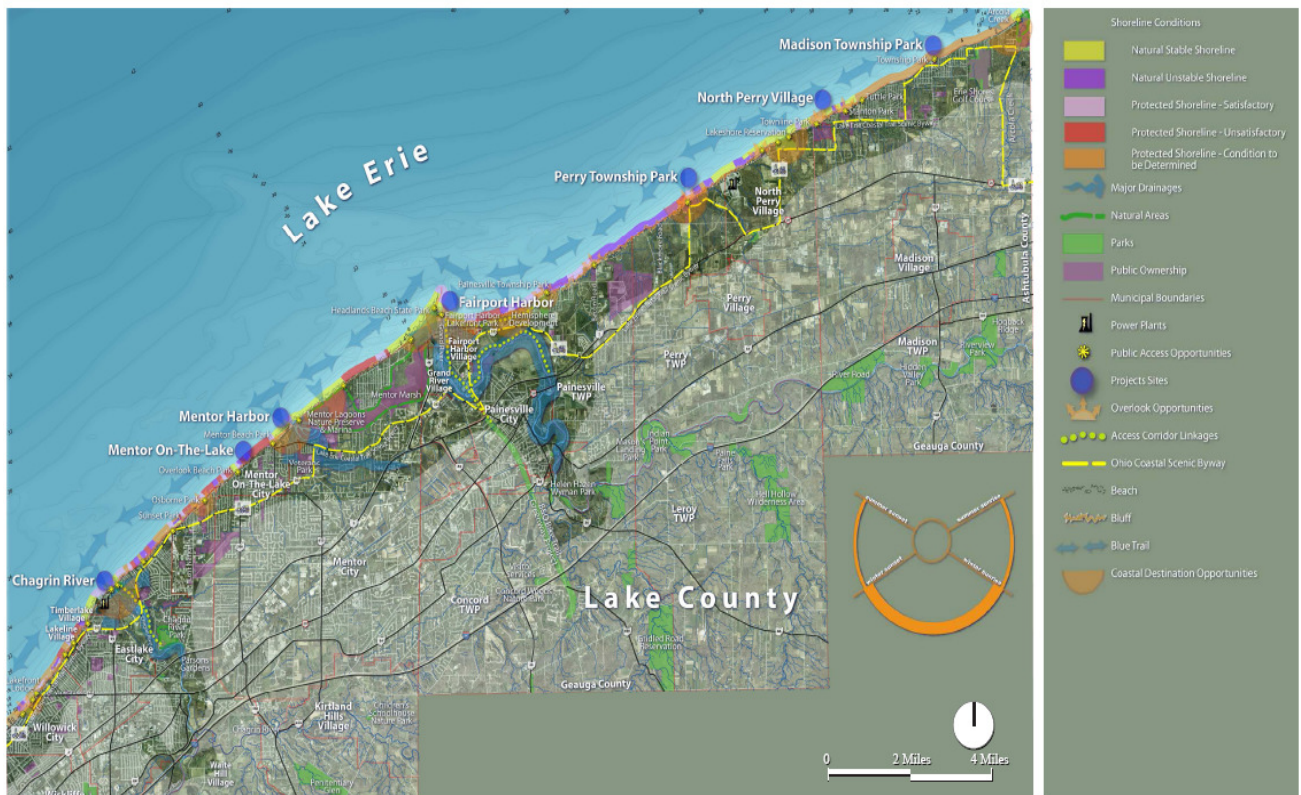
Members of the LCCPC represented waterfront and non-waterfront communities, businesses, and individual citizens with a vested interest in the condition and development of the shoreline. The Committee allows for a multijurisdictional approach to coordinating future planning and development possibilities along the shoreline. Through the use of community meetings and discussions, the LCCPC identified priority projects for consideration.

The primary purpose of identifying the implementation projects was to provide a more detailed examination of each of these potential project sites. Specific ideas and project sites were determined by the LCCPC prior to the CDP and then adjusted during the CDP process. The criteria for determining the selection of potential projects included:

- Physical factors related to shoreline and bluff erosion; harbor entrance safety for boaters; and sediment deposition within the harbors.
- Strategic location along the Lake County shoreline for providing refuge from storms.
- Shoreline and waterfront development that could serve as an economic stimulus for Lake County by providing a catalyst for land based development.
- Additional optimal recreation opportunities.
- Sites are publically owned.
- Regional interest and potential for project funding.

The project areas for purposes of this grant application include (listed west to east, see map):

- Chagrin River Offshore Breakwaters – safe harbor access improvements;
- Mentor-on-the-Lake - shoreline protection and potential beach creation through the creation of offshore breakwaters;
- Mentor Harbor - safe harbor access improvements and dredging;
- Perry Township Park – boat launch improvements and bluff protection;
- Stanton Park in Madison Township - shoreline enhancement/beach protection and access;
- Township Park in Madison Township - protected beach and launch facility as well as potential park improvements



While these specific projects make up this application, The Lake County Port Authority is pursuing this funding in an effort to implement the Coastal Development Plan. To highlight these projects on a west to east basis, the following narrative is included:

#### 1. Eastlake, Chagrin River offshore breakwaters

Located in Eastlake, the mouth of the Chagrin River empties into Lake Erie just east of the First Energy electric power plant. There are approximately 1, 400 recreational boats in the Chagrin River corridor. A sheetpile jetty on the west and stone revetment/breakwater on the east form a short channel between the lake and the river. The location and orientation of the channel provides very little wave protection. This lack of protection frequently results in unfavorable wave climate for watercraft using this entrance. Breakwaters that form the water intakes and discharge for the power plant extend several hundred feet into the lake and likely disrupt the predominant easterly flow of the littoral drift. While impact the replenishment of the shoreline, deposits in the river mouth from bedload sediment require dredging to maintain adequate navigation depth at the entrance and through the channel.

Sedimentation in the channel has increased in recent years due to upstream development patterns and the increase in impervious surfaces. The original river channel located just to the east of the main entrance is typically blocked from Lake Erie by sand deposits. Normal discharge flow of this channel is not strong enough to counteract wave energy of the lake, resulting in the closed channel. It is the objective of the Coastal Development Plan to open this original channel to improve water quality within Eastlake Harbor area

The primary goals for this site are to provide a protected harbor and safe entrance to the river from the lake, and address the issue of sedimentation. There has also been interest expressed in developing a facility that provides public access to the lake for fishing and other recreational use. These objectives, including land acquisition for public river access, are currently being pursued with county and state officials.





## 2. Mentor-on-the-Lake, Mentor Beach Park

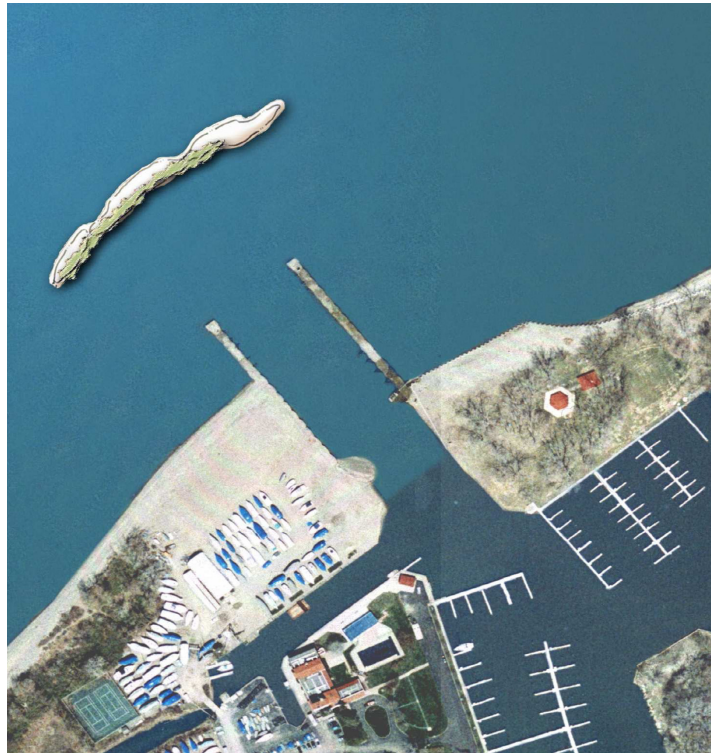
A high percentage of shoreline in Mentor-on-the-Lake (MOTL) is subject to severe beach and bluff erosion. Much of the shoreline in MOTL is privately owned and as a result has received a variety of erosion control measures ranging from no treatment to modular sea walls to very elaborate stone and concrete structures. The results of this disjointed array of structures are a shoreline with an inconsistent appearance, debatable effectiveness, and marginal usability.

Creating a more accessible and usable public shoreline and beach at Mentor Beach Park is the primary objective at this site. Offshore breakwaters will also protect landside infrastructure.



## 3. Mentor-on-the-Lake/Mentor, Mentor Harbor Improvements

Mentor Harbor, located just east of Mentor-on-the-Lake, is the location for the Mentor Harbor Yacht Club and the city-owned Mentor Lagoons Marina. The marinas are located in the Mentor Lagoons that were excavated inland from the shore of Lake Erie. A 200 foot wide channel between two steel sheetpile jetties forms the entrance to the Lagoons. The orientation of the channel exposes the harbor to wind and waves from the northwest through northeast direction and creates hazardous conditions for boaters entering or exiting the lagoons. Difficult navigation through the channel is exacerbated by the presence of a sunken barge at the south end of the channel that was placed to reduce wave energy entering the lagoons. The channel is constricted to approximately 60 feet in width by the barge. Although the jetties do not appear to have changed the littoral drift pattern, significant shoaling at the channel entrance requires dredging several times a year. A Coastal Barrier Resource Area (CBRA) is located immediately east of the harbor and will be addressed through the design and permitting process.



The goal for this site is to examine the existing channel entrance and evaluate potential solutions that 1) protect the harbor and allow for safe navigation through the channel into the lagoons; and 2) effectively redirect, reduce, or remove the deposition of sand at the entrance to the channel.

As noted above, shoaling at the entrance and difficult and hazardous navigation through the channel are the issues that require attention at this site. The conflicting nature of these issues means that the solution to one tends to worsen the situation with the other.

Protection of the harbor and safe navigation through the channel is difficult to provide without the corresponding accumulation of sediment in the entrance and disruption of the littoral drift (at least until the entrance channel is filled). The Coastal Development Plan provides the protection of the harbor through the use of an offshore breakwater but requires either a sand by pass system or scheduled dredging to keep the entrance channel open. Sand that is bypassed or dredged should be placed east of the entrance channel to maintain the littoral drift and replenish the adjacent beach.

#### 4. Perry Township, Perry Township Park

Perry Township Park is a 50 acre public park with approximately 1000 feet of shoreline along Lake Erie. The park is augmented by the recent purchase of Camp Roosevelt located immediately to the west which adds another 1000 feet of shoreline. Of the 2000 feet of public shoreline, access to the lake is limited to an unsafe boat launch and small beach comprising approximately 100-200 feet of shoreline at the far eastern end of the park. The remainder of the park shoreline consists predominantly of a concrete revetment - built in 1983 to protect against wave action at the toe of the bluff; and a steeply eroding bluff with little or no beach at the base. Access to the lake at these locations is nearly impossible.

The primary goals for this site include:

- the protection and stabilization of the bluff west of the concrete revetment (Camp Roosevelt Area);
- creating a more usable shoreline or beach at the base of the bluff;
- incorporating ADA access to the lake as part of a new Senior Center
- providing a protected harbor and improved the boat launch facility at the east end of the park.

The CDP for Perry Township Park will provide:

- Adequate water depths at the protected harbor/boat launch area
- Offshore barriers that maintain littoral drift and beach replenishment while protecting the harbor entrance area;
- Slope stabilization on the west side of the property including:
  - cutting back the slope closer to a ratio of 2.5:1 (2.5 horizontal feet to 1 foot of vertical change), presuming that there is space at the top of the bluff;
  - reinforcing the surface with erosion control fabric;
  - providing groundwater drainage if necessary; and





## 5. Madison Township, Stanton Park

Stanton Park is owned by the Township and consists of 35 acres, 1,100 feet of shoreline, 1,100 feet of road frontage and several buildings as well as an in-ground pool and all public utilities. In addition, the Park sits on a bluff approximately 50 feet above Lake Erie. This bluff is subject to erosion caused by runoff and drainage while the beach is subject to wave-driven erosion.

The concept shown in this report includes a series of offshore breakwaters to protect and enhance the existing beaches. The Coastal Development Plan will:

- restore, enhance, and protect the shoreline and bluffs from erosive wave action;
- provide waterfront access and recreational beaches for swimmers and sunbathers; and
- create potential coastal wetland zones for enhanced fish and wildlife habitat.



## 6. Madison Township, Madison Township Park

Madison Township Park is a 12 acre public park with approximately 660' of shoreline. Amenities at the park include a large public beach area, playground equipment, baseball diamond, basketball court and lakefront picnic pavilion. A 16- 20' graded slope above the water provides great views of Lake Erie. A walking path with two entrance points provides access to the beach.

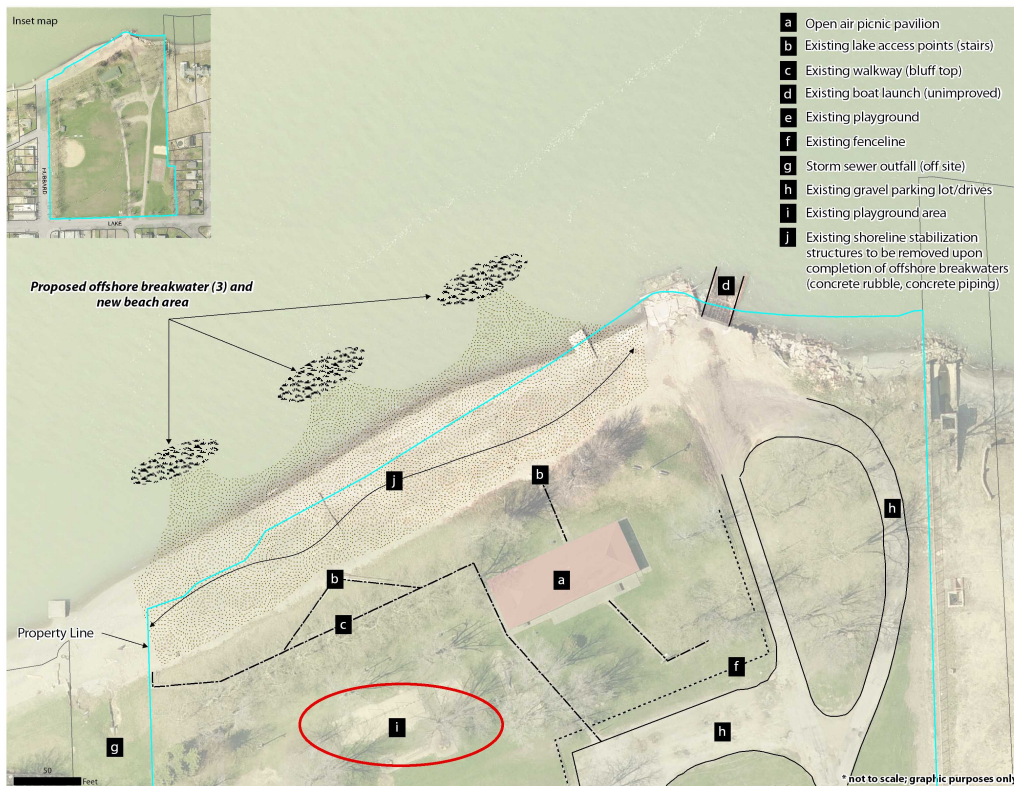
The shoreline is characterized by and numerous concrete cylinders and miscellaneous structures and debris used as a form of shoreline protection. While initial protection measures may have proven beneficial, this strategy results in an unfriendly environment to lake users and aesthetically unappealing appearance to visitors. A boat launch is located at the east end of the shoreline. The boat launch is exposed to wind and wave from all directions and is difficult to use other than when lake conditions are calm. This launch provides no protection, tie-ups or signage for recreational watercraft. While ample area exists for parking, launches at this site are limited due to safety. Preliminary data indicates that water depths are relatively shallow in and around the boat launch area.

The CDP will provide a protected and usable boat launch facility with improved signage, access, and parking in addition to enlargement and enhancement of the beach on the west side of the park.

Specific the CDP will provide:

- adequate water depths at the protected boat launch area
- offshore barriers that maintain the littoral drift allowing for beach protection and enhancement while protecting the launch area;

The eastern half of the site provides an improved boat launch facility within a small harbor that is protected by rubblemound breakwaters. The boat launch basin would be dredged and sand would be placed to the east of the boat launch to supply the down drift property.





### Design Profile:

In order to properly design the offshore barriers and based on previous studies, the design wave climate along this reach of the Lake County shoreline is estimated at approximately 11 feet. This height was used for the conceptual analysis of the shore protection structures. The breakwater structures assumed a typical three layer system with larger armor stone placed over smaller filter stone which is placed over a smaller core material. It was assumed the breakwaters would have a crest width that would accommodate three armor stones. The side slopes were assumed with 2H to 1V slopes and the toe of the structures was excavated approximately 2 feet to account for toe scour. The height of the breakwaters was estimated at +9.5 LWD.

It should also be noted that the Coastal Development Plan identified North Perry Village and Fairport Harbor as targeted sites. The North Perry Village project is proceeding with 100% local funds. Fairport Harbor, due to its complexity and relationship to an adjacent private development will be addressed independent of the above listed projects.

### Project Schedule:

As mentioned earlier, the Lake County Port Authority assumed responsibility in January 2008 for the implementation of the Coastal Development Plan. However, in order to ensure that the Port Authority's execution of the plan is consistent with the community's desires, the Lake County Planning Commission will be an active partner in every step of the process.

The community's first success in executing this plan occurred when the State of Ohio, through its 2008 Capital Budget allocated \$1.25 million to Coastal Development Plan. These funds, in addition to almost \$480,000 previously allocated by the State of Ohio will provide a significant local match to the Federal funds requested in this grant application.

In order to proceed in a timely manner and meet the agency's objective of initiating work within 90 day of a grant announcement, the Port Authority plans to commence demolition and debris removal at the Madison and Perry Township parks in addition to beginning repair work on the sheetpile jetties at Mentor Harbor (these jetties have exceeded their design life and are in danger of collapsing). While this work is underway, the Lake County Port Authority, using the local funds, will begin final engineering designs as permits are being sought. By combining the permit and design efforts simultaneously, the Port Authority hopes to minimize the need for costly and time consuming delays. With final design and permit approval, the Port Authority will undertake its standard bidding process to secure contract award. The Lake County Port Authority, as required of its authorizing legislation (section 4582 of the Ohio Revised Code) is required to pay prevailing wage on all construction projects. In addition, the Port Authority will abide by all State and Federal bidding requirements associated with these funds, including a safety plan in accordance with NOAA's requirements.

### Conclusion

While the Coastal Development Plan has identified a roadmap for improving and protecting the Lake County Coastline, the successful implementation of this plan will provide significant economic development and job creating opportunities. As part of its process, The Coastal Planning Committee engaged the Kent State University Urban Design Center, to investigate the potential inland development opportunities resulting from the shoreline improvements. While conceptual in nature, the Urban Design Center identified the opportunity for hundreds of residential units, several hundred thousand square feet of mixed use and commercial

developments as well as additional recreational facilities. The result will provide long term job creation to compliment the near term construction jobs provided by this project.

Finally, the Lake County Port Authority looks forward to entering into a cooperative agreement with the National Oceanic and Atmospheric Administration in order to carry out the Coastal Development Plan. It was the early financial support of NOAA that allowed the Lake County community to proceed with this extensive planning process. A close working relationship with NOAA will ensure that best practices are employed and that the success achieved in Lake County is shared nationally.